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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/815,335	04/01/2004	Richard W. Citta	P01,0447-02	7549
26574	7590	04/26/2010		
SCHIFF HARDIN, LLP PATENT DEPARTMENT 233 S. Wacker Drive-Suite 6600 CHICAGO, IL 60606-6473			EXAMINER SINGH, HIRDEPAL	
			ART UNIT 2611	PAPER NUMBER
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/815,335	<b>Applicant(s)</b> CITTA ET AL.	
	<b>Examiner</b> HIRDEPAL SINGH	<b>Art Unit</b> 2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 01 March 2010.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 60-62 and 64-84 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 60-62, 64-71 and 73-84 is/are rejected.
- 7) ☒ Claim(s) 72 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948)                        | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### **DETAILED ACTION**

1. This action is in response to the amendment filed on March 01, 2010. Claims 60-62 and 64-84 are pending and have been considered below.

### ***Response to Arguments***

2. Applicant's arguments with respect to claims 60-62 and 64-84 have been considered but are moot in view of the new ground(s) of rejection.

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 60-62, 64-65, and 70-71, 73-76, 78-82 and 84 are rejected under 35 U.S.C. 103(a) as being unpatentable over Khayrallah et al. (US 6,320,919) in view of Yagyu (US 6,591,390) further in view of Easwar et al. (US 6,498,816).

### **Regarding claims 60, 73 and 79:**

Khayrallah discloses a method and system for decoding data by using the decoded data symbols, re-encoding the decoded data to control the equalizer/estimator. receiving a signal that is encoded at the transmitting end (abstract; column 4, lines 38-45).

Khayrallah discloses keeping track the values of the received signal/symbol (column 17, lines 14-35; figure 6);

Khayrallah discloses generating a reliability or quality or error signal by re-encoding the decoded signal (column 7, lines 3-12, and lines 57-64).

Khayrallah discloses all of the subject matter as described above except for specifically teaching that the received signal contains a code vector; and the reliability factor is a measure of reliability of the decoding. However, it is inherent that the encoded signal received at the receiver is in the form of code vector i.e. the signal may be in the form of 8 bit or 16 bit code for example.

Easwar in the same field of endeavor discloses a system and method for formatting each of encoded data into respective regions where the system decoder re-encodes the multi part frame data (figure 7) from the reliability of the system (column 8, lines 36-50).

Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention to use the teachings of Easwar in Khayrallah to get the reliability factor based on the decoding in order to check the performance of the system related to the incoming signal whether the system is performing the required operation to get back the information reliably, by using a code vector at the receiver to use the same decoding technique as use at the transmitter to encode the signal.

Yagyu in the same field of endeavor discloses an adaptive decoder where the reliability factor is a measure of reliability of the decoding (column 1, lines 45-50).

Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention to use the encoded signal for communication networks and receiving the same at the receiver in the form of code vector and to get the reliability factor based on the decoding in order to check the performance of the system related to the in coming signal whether the system is performing the required operation to get back the information reliably, by using a code vector at the receiver to use the same decoding technique as use at the transmitter to encode the signal.

**Regarding claim 61:**

Khayrallah discloses all of the subject matter as described above and further discloses that the equalizer/estimator is controlled in accordance with the re-encoded data fed back to the equalizer through characterization estimator 32 (figure 3; column 8, lines 1-40).

**Regarding claims 62, 74 and 80:**

Khayrallah discloses all of the subject matter as described above and further discloses that the one of the values of the signal is largest (column 13, lines 19-26).

**Regarding claims 75 and 81:**

Khayrallah discloses all of the subject matter as described above and further discloses that the reliability or quality or error signal is generated to control the equalizer based on re-encoding the decoded signal, the un-decoded signal from the output of equalizer, and the un-modulated signal from the input of equalizer (figure 3; column 8, lines 19-42) it is clear that the reliable/control/feed back signal is derived from comparing the signal values. Furthermore, Khayrallah discloses deriving the

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reliable/error signal from the difference between received and predicted data values (column 12, lines 35-45).

**Regarding claims 64, 76 and 82:**

Khayrallah discloses all of the subject matter as described above and further discloses that the reliable factor/signal or error signal or control signal is generated by using a parameter associated with signal to noise ratio and the coefficient of tap values, where one of the coefficient of tap values is largest (column 13, lines 1-26), but doesn't explicitly disclose that the reliable signal/factor is based on the difference between a largest and next to largest value of received signal. However, the reliability factor/signal or error signal generated is based on different parameters such as coefficients of tap values and signal to noise ratio including the largest value as discussed above. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to generate a reliable signal/factor based on the difference between largest and next to largest value in the received signal. One would have been motivated to use the largest and next to largest values to generate the reliability signal/factor to get the decoded data in the same form as it was before the encoding.

**Regarding claim 65:**

Khayrallah discloses all of the subject matter as described above and further discloses that the equalizer/estimator is controlled according to the reliability or error signal generated by using the decoded, encoded signal values (figure 3; column 8, lines 19-40; column 15, lines 36-50).

**Regarding claim 70:**

Khayrallah discloses all of the subject matter as described above and further discloses that the received signal values are provided to correlation estimator for estimating interference (column 7, lines 38-50).

**Regarding claims 71, 78 and 84:**

Khayrallah discloses all of the subject matter as described above and further discloses that the reliable or error signal/factor is generated based on the difference between square of received signal values (column 11, lines 1-12).

5. Claims 66-69, 77 and 83 are rejected under 35 U.S.C. 103(a) as being unpatentable over Khayrallah et al. (US 6,320,919) in view of Yagyu (US 6,591,390) further in view of Easwar et al. (US 6,498,816) as applied to claim 60 above, further in view of Molnar (US 6,567,481).

**Regarding claims 66, 77 and 83:**

Khayrallah discloses all of the subject matter as described above except for specifically teaching that the reliable signal/factor is generated based on a comparison of one received signal value to a threshold.

However, Molnar discloses a similar method and receiver for data detection by using decoded and re-encoded data to generate a reliable or error signal to control the equalizer, and further discloses that the received signal symbol is adjusted according to the error or reliable signal until it converges to a predetermined threshold (column 3, lines 28-41) i.e. the received signal is compared to a threshold.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to compare the received signal value in Khayrallah to a threshold to generate a reliable signal/factor. One would have been motivated to compare a received signal value to a threshold to generate the reliable signal/factor to make sure the weighting of the feedback is within the required limit.

**Regarding claim 67:**

Khayrallah discloses all of the subject matter as described above and further discloses that the received signal value is largest one of received signal values (column 13, lines 19-26).

**Regarding claim 68:**

Khayrallah discloses all of the subject matter as described above except for specifically teaching that the received signal symbol is adjusted according to the error or reliable signal until it converges to a predetermined threshold.

Molnar discloses a similar method and receiver for data detection where the received signal symbol is adjusted according to the error or reliable signal until it converges to a predetermined threshold (column 3, lines 28-41) i.e. the received signal is compared to a threshold, but does not explicitly disclose that the reliable signal is generated if the received signal value is greater than the threshold. However, this is just a variation of comparison between the received signal value and the threshold to generate the reliable signal, as threshold is greater than or less than or equal to the received signal value.



Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to generate a reliable signal/factor if the compared received signal value is greater than the threshold. One would have been motivated to generate the reliable signal/factor if the received signal value is greater than threshold to make sure the noise or interference level is under a limit.

**Regarding claim 69:**

Khayrallah discloses all of the subject matter as described above and further discloses that the generated reliability signal/factor is dependent on the magnitude of one received signal value (column 13, lines 1-26).

***Allowable Subject Matter***

6. Claim 72 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

7. The following is a statement of reasons for the indication of allowable subject matter: The prior art of record discloses a system and method for receiving a signal containing a code vector the system decodes and get a reliability of the received signal and detects the received decoded signal, but prior art of record fails to disclose that in generating of a reliability factor based upon a difference between at least two of the received signal values comprises generating a reliability factor based upon a difference

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between a square of a largest and a square of a next largest of the received signal values.

### ***Conclusion***

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

a. Agee et al. (US 2006/0193373) discloses a system and method for high bandwidth efficient communication.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to HIRDEPAL SINGH whose telephone number is (571) 270-1688. The examiner can normally be reached on Mon-Fri (Alternate Friday Off) 8:30AM-6:00PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shuwang Liu can be reached on 571-272-3036. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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/H. S./

Examiner, Art Unit 2611

/Shuwang Liu/

Supervisory Patent Examiner, Art Unit 2611